Roll No. | | | | | | | | | | | | |

Total No. of Pages : 02

Total No. of Questions : 18

B.Tech. (CSE/ME/IT) (Sem.–1,2)

ENGG. PHYSICS/PHYSICS-I

Subject Code : PH-101

M.Code : 54016

Time : 3 Hrs. Max. Marks : 60

INSTRUCTIONS TO CANDIDATES :

1. **SECTION-A is COMPULSORY consisting of TEN questions carrying TWO marks each.**
2. **SECTION - B & C. have FOUR questions each.**
3. **Attempt any FIVE questions from SECTION B & C carrying EIGHT marks each.**
4. **Select atleast TWO questions from SECTION - B & C.**

SECTION-A

Write short notes on :

1. Define Faraday's law.
2. Explain Dia and Para magnetism.
3. What are ferrites?
4. What is population inversion?
5. Explain optical pumping.
6. What is theory of relativity?
7. Write postulates of old quantum theory.
8. Define X-rays.
9. What is Meissner effect?
10. Define group and phase velocities.

SECTION-B

11. Write Maxwell equations in differential form and discuss physical significance of each equation.

12. What are magnetic materials? Discuss hard and soft magnetic materials with examples.

13. Discuss possible transitions between two energy levels of an atomic system and deduce the expressions for Einstein Coefficients.

14. Derive the expression for numerical aperture of an optical fibre in terms of acceptance angle.

SECTION-C

15. Deduce the formula for relativistic variation of mass with velocity.

16. Explain Bragg's law and its applications in crystallography.

17. Derive time dependent and time independent Schrödinger wave equation.

18. What is superconductivity? Discuss Type-I and Type-II superconductors.

NOTE : Disclosure of identity by writing mobile number or making passing request on any page of Answer sheet will lead to UMC case against the Student.